Date: Sat, 28 Aug 93 04:30:18 PDT
From: Ham-Ant Mailing List and Newsgroup <ham-ant@ucsd.edu>
Errors-To: Ham-Ant-Errors@UCSD.Edu
Reply-To: Ham-Ant@UCSD.Edu
Precedence: Bulk
Subject: Ham-Ant Digest V93 #29
To: Ham-Ant

Ham-Ant Digest Sat, 28 Aug 93 Volume 93 : Issue 29

Today's Topics:

Send Replies or notes for publication to: <Ham-Ant@UCSD.Edu>
Send subscription requests to: <Ham-Ant-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Ant Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-ant".

Date: 27 Aug 1993 00:28:14 GMT
From: mvb.saic.com!unogate!news.service.uci.edu!usc!elroy.jpl.nasa.gov!lll-winken.llnl.gov!s07.es.llnl.gov!hunter@network.ucsd.edu
Subject: Antenna modelling program (2GHz)
To: ham-ant@ucsd.edu

Do the antenna modelling programs work for antennas up to 2.5 GHz?

I would prefer one for the Macintosh, but I also have PC.

Steven Hunter KC6RKV

Date: Fri, 27 Aug 1993 19:34:59 GMT
From: pravda.sdsc.edu!news.cerf.net!usc!sdd.hp.com!col.hp.com!news.dtc.hp.com!

srgenprp!alanb@network.ucsd.edu
Subject: Antenna modelling program (2GHz)
To: ham-ant@ucsd.edu

Steve Hunter (510)423-2219 (hunter@s07.es.llnl.gov) wrote:
: Do the antenna modelling programs work for antennas up to 2.5 GHz?

If they don't, just scale all the dimensions by 100 and model it as a
25 MHz antenna. It may seem wierd to model an antenna with 10-inch
diameter tubing or a 200-foot dish, but it should give the right answer!

AL N1AL

Date: 27 Aug 93 18:16:02 EST
From: titan.ksc.nasa.gov!k4dii.ksc.nasa.gov!user@ames.arpa
Subject: How to use dip oscillator on an antenna?
To: ham-ant@ucsd.edu

In article <1993Aug18.153200.20596@nntpd2.cxo.dec.com>,
little@nuts2u.enet.dec.com (nuts2u::little) wrote:
>
> algol@stein.u.washington.edu () writes:
> > Does anyone out there have any experience using a dip oscillator on
> >antennas?

Todd-

I've wrestled with this question, and tried different things. I have
concluded that nearly any coupling loop you might come up with, will supply
a reactive component that will change the resonance of the antenna.

The solution is to connect a short circuit across the feedpoint. Couple
the oscillator's coil directly to the antenna, by laying the coil on the
wire so the turns are in line with the wire. I do not know the effect of
leaving the shorted feedline connected, but expect it won't change the
resonance if it is at the center.

If your oscillator goes above two meters, try un-bending a wire coat
hanger, and seeing if you can couple to it. The dip should be at the
frequency where the wire is about a half wavelength. Other dips should
appear for frequencies where the wire is a multiple of a half wavelength,
such as 146, 292, 438 MHz et cetera.

73, Fred, K4DII

Date: Sat, 14 Aug 1993 15:45:34 GMT
From: europa.eng.gtefsd.com!emory!rsiatl!ke4zv!gary@uunet.uu.net
Subject: Larsen Dual Band Antenna
To: ham-ant@ucsd.edu

In article <1993Aug13.193355.12995@pixar.com> bruce@mongo.Com (Bruce Perens) writes:
>
>I'm wondering if it's bad grounding and I have to wirebrush the underside
>of the roof around the hole to get better grounding. I would have expected
>that 2 mils of paint would be quite transparent to RF at 2 meters. Can
>someone more experienced speak on this point? The mount
>doesn't reliably contact the edges of the hole (which are bare metal) because
>of the way it's constructed.

The way the part of an NMO that goes on the underside of the roof
is constructed, it "bites" into the metal when the mount is tightened.
It *should* be giving you good contact to the metal.

Gary

--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

Date: Fri, 27 Aug 1993 13:50:49 GMT
From: mustang.mst6.lanl.gov!nntp-server.caltech.edu!news.claremont.edu!ucivax!news.service.uci.edu!usc!howland.reston.ans.net!spool.mu.edu!torn!nott!cunews!freenet.carleton.ca!@hub.ucsb.edu
Subject: Low Frequency antenna ideas
To: ham-ant@ucsd.edu

Are there any LOWFERS out there? I've got a hypothetical question
regarding the best (cost vs. performance) design for MF radiobeacon
antennas operating between 300KHz and 410KHz.

First a little background. The Global Positioning System provides about
100 metre accuracy (2drms) for civilian users. With the addition of
differential corrections, the accuracy can be improved to somewhere in the
5 to 10 metre accuracy range. The USCG (and the CCG) will be sending
these differential corrections via existing MF radiobeacon signals (50
baud MSK) for GPS users at sea.

Now, if you needed differential coverage in an area where you didn't have an existing MF radiobeacon, what would YOUR choice be in terms of a cost effective antenna? Your transmitter would be approximately 50 watts output, and you want the greatest possible groundwave coverage. The beacon site would be on land, with average ground conductivity.

For Marconi-type antennas, my own experience on ships would lead me to believe that, for marine frequencies below 512 KHz, a "long" wire antenna will provide a superior signal than most whip antennas, with the possible exception of certain "whips" that have large (and I mean large!) values of self capacity. I must admit that my conclusions are largely empirical in nature. I've always attributed this superior performance of shipboard wire antennas due to a larger radiation resistance relative to resistive losses, be they loading coil losses or ground losses, resulting in greater efficiency.

My nemesis (an ex-Navy tech), poo-poos my pet theory, putting forward that a vertically polarized signal will provide the best groundwave coverage for MF frequencies (this is true!), and cites the example of the AM broadcast station, which almost invariably uses a vertically-polarized antenna. He claims that's why whips are best (at least on a ship).

Now getting back to our land-based MF beacon antenna, I would think that an electrically-short Marconi-type antenna would require an extensive (and expensive) ground radial system to achieve a reasonable measure of efficiency. The efficiency of a balanced antenna (say a dipole) should be greater because ground conductivity isn't as much a factor as is with Marconi antennas, but assuming a shortened horizontal dipole, the vertical component would be small, resulting in poor groundwave propagation.

How about an electrically short inverted V antenna with the apex support at 150 or 200 feet. I understand that a half-wave inverted V has a vertically-polarized component. Would this be the case with electrically short inverted V?

What type of antenna would YOU recommend? Cost vs. performance is a major factor. I'm am not involved in land-side radio beacon installations myself, but as an amateur radio operator, I find this an interesting question. I may even condense the responses and forward them to our engineering section. Who knows, the tax dollars you save may be your own!
:-)

--

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Russ Renaud ve3uav/aa8lu l Internet: ae517@freenet.carleton.ca
CCG-Fleet l or
tel (613) 993-2479 l ve3uav@amsat.org

Date: Fri, 27 Aug 1993 20:10:42 GMT
From: spsgate!mogate!newsgate!sauron!smith@uunet.uu.net
Subject: Low Frequency antenna ideas
To: ham-ant@ucsd.edu

If you are contemplating dipoles at 100 - 200 ft then I would suggest that there is more than adequate height for a top loaded Marconi especially as 300 - 500 khz is'nt really that low in LF terms.

When I was Station Engineer at MENAS 5c Decca Station we used a 300 ft top loaded vertical.The Capacity hat was a mix of the guy wires and the crossbars on top.This was for a frequency of 85khz +/- 5khz.

Admittedly we were located on the shores of the persian gulf with near perfect ground conductivity so during daylight hours we had a stable groundwave out to 150 miles but when skywave appeared it really nuked the system.I'm not sure what large phase inversions would have on your 50 baud data system though.

With your higher frequency beacons I doubt if your groundwave would be as far as the Decca system but your efficiency should be better.Are you looking for 360 degree coverage or just 2 directions ?

73 Trevor G3WQO/AB5EU

Date: 28 Aug 1993 09:22:59 GMT
From: usc!howland.reston.ans.net!gatech!asuvax!chnews!news@network.ucsd.edu
Subject: Low Frequency antenna ideas
To: ham-ant@ucsd.edu

In article <CCF7sp.EB1@freenet.carleton.ca>
    ae517@Freenet.carleton.ca (Russ Renaud) writes:

>Are there any LOWFERS out there? I've got a hypothetical question
>regarding the best (cost vs. performance) design for MF radiobeacon
>antennas operating between 300KHz and 410KHz...

>For Marconi-type antennas, my own experience on ships would lead me to
>believe that, for marine frequencies below 512 KHz, a "long" wire antenna
>will provide a superior signal than most whip antennas...

At these frequencies, "long-wire" antennas are really short vertical monopoles that radiate chiefly from the downlead wire. The horizontal portion merely serves as a capacity hat, even if the downlead is

connected to one end of it rather than to the middle.

>... I would think that
>an electrically-short Marconi-type antenna would require an extensive (and
>expensive) ground radial system to achieve a reasonable measure of
>efficiency. The efficiency of a balanced antenna (say a dipole) should be
>greater because ground conductivity isn't as much a factor as is with
>Marconi antennas, but assuming a shortened horizontal dipole, the vertical
>component would be small, resulting in poor groundwave propagation.

>How about an electrically short inverted V antenna with the apex support
>at 150 or 200 feet. I understand that a half-wave inverted V has a
>vertically-polarized component. Would this be the case with electrically
>short inverted V?

>What type of antenna would YOU recommend?

With the small, inverted-V, ground conductivity *would* be a serious
loss factor, since a substantial amount of current would flow through
it, capacitively coupled from the ends of the dipole.

What you really have with this is a small loop antenna. So, why not
go with that? Assuming you only have the single support, run a
wire in the same position as the inverted-V over the top of the pole.
But when it gets to the other end, continue it back along the
ground to the starting point. Notice that there is no ground system
except for the return wire. Design a network to transform the low
R+jX at the antenna terminals to something your transmitter can handle.

Downside: The antenna is bidirectional, not omni. It may have
too much Q and, therefore, too narrow a bandwidth for the data
you wish to transmit.

+-------------------------+--+
Jim Bromley W5GYJ	
Intel Corp. m/s C11-91	This message transmitted with
5000 W. Chandler Blvd.	100% recycled electrons.
Chandler,AZ 85226	
tel: 602-554-5183	Internet: jbromley@sedona.intel.com
+-------------------------+--+

Date: 28 Aug 93 06:47:14 GMT
From: usc!cs.utexas.edu!uwm.edu!biosci!barrnet.net!infoserv!cpuig!
news@network.ucsd.edu
Subject: Mininec3
To: ham-ant@ucsd.edu

mwhitsitt@tamu.edu writes:

> I downloaded Mininec3 from the one of the Simtel mirrors because the descript
>
> Does anyone have the manual? Or can someone please explain the coordinate
> system and the segments and the number of wires and all that stuff? I would
> truly appreciate it.
>

MININEC 3 is documented in a report that you can obtain from NTIS (National Technical Information Service). I believe that NTIS has an 800 number (try 1-800-555-1212 for directory assistance) and you can pay with a credit card. Sorry, I don't remember how much they charged me, but it did not seem unreasonable at the time.

The 130 page report was originally issued by the Naval Oceans Systems Center (NOSC), San Diego, CA as follows:

> J. C. Logan and J. W. Rockway. "The New MININEC (Version 3): A Mini-Numerical Electromagnetic Code." Technical Document 938. September 1986.

My copy has the code "AD-A181 682" stamped on the cover. I believe that this is the NTIS access code that you should give to the NTIS customer service rep.

This report includes the following main sections:

1.0 INTRODUCTION (3 pages)
2.0 THE THEORY OF MININEC (18 pages)
3.0 VALIDATION AND MODELING GUIDANCE (44 pages)
4.0 EXAMPLES AND USER GUIDANCE (13 pages)
References (2 pages)
Appendix A. A Pre-Processor for MININEC (2 pages)
Appendix B. A Post-Processor for MININEC (8 pages)
Appendix C. MININEC Program Listing (34 pages)
Appendix D. Notes on Compilation of MININEC (missing from my copy)

The Appendices consist primarily of source code listings (BASIC).

Section 4.0 is the most useful, although section 3.0 is also interesting. Section 2.0 is quite mathematical and will be meaningful only if you know antenna theory.

--
Carlos Puig, KJ6ST cpuig@infoserv.com Campbell, CA

Date: Sun, 15 Aug 1993 19:23:03 GMT
From: noc.near.net!lynx!j.perry@uunet.uu.net
Subject: Q: on how to determine if antenna is hooked to good ground
To: ham-ant@ucsd.edu

I am designing a variation of the 2m on the glass vertical that appeared in QST recently. I have located a screw on the back of the hatch back which seems to go into the car body (part of the hatch-back) I need to check this screw to see if it is a good ground. The screw has a black enamel surface which I may need to sand to get a good connection. I don't have a volt meter. Is there a simple way I can check this ground location? If not, I can probably get a volt meter. What would the method be then?

Please email responses. Thanks in advance!

Jeffrey Perry
N1ILY

Date: 27 Aug 93 20:31:18 GMT
From: ogicse!hp-cv!hp-pcd!hpcvsnz!tomb@network.ucsd.edu
Subject: SWR Meters
To: ham-ant@ucsd.edu

Tom Bruhns (tomb@lsid.hp.com) (That's me) wrote:
: Gary Coffman (gary@ke4zv.uucp) wrote:

(a couple paragraphs from my earlier posting deleted...)

: : Now this would all be pretty academic if we couldn't separate
: : Vf and Vr so we could measure them. Various bridge type circuits
: : can be used to separate the two wave components by taking advantage
: : of non-reciprocal properties of the bridge circuit. We can also
: : take advantage of the properties of travelling waves in the monimatch
: : to do the same thing. It's difficult to show how to build a VSWR
: : meter without drawings, so I'll refer you to the instrument on
: : page 27-11 of The ARRL Antenna Book for a line section that will
: : work at VHF/UHF and that can be made out of ordinary copper plumbing
: : fixtures.

: Gary earlier in the posting noted that an SWR bridge measures VSWR or
: ISWR rather than SWR. I take some issue with this. I claim that
: almost all bridges that are physically a small fraction of a wavelength
: make their measurement by ratioing current and voltage at a point in

: the line; a true VSWR meter would measure the RMS voltage at at least
: two places on the line (separated, for example, by 1/4 wavelength in
: the line), but this is NOT the way these meters work. Whether the
: voltage is measured with a transformer, a capacitive divider, or a
: resistive divider, it's the voltage at a _single_ point in the line.
: And at that same point, the current is measured, with a current
: transformer, the voltage drop through a resistor, or as an inductive
: pickup that's also a capacitive pickup monitoring the voltage:
: that is, the parallel wire.

: A forward wave will have v/i=z, where i is measured as positive if
: flowing toward the load; a reverse wave will have v/i=z, where i is
: measured as positive is flowing away from the load. The SWR meter
: works by expecting v-iz=0 for i measured positive toward the load;
: built in to the meter is an assumption about z! The meter does NOT
: know the z of the line you are measuring, so if you use a 50 ohm
: meter on a 75 ohm matched line, it will tell you incorrectly that
: the line has an SWR greater than 1:1.

NOTE that a true VSWR meter, one that works by actually measuring the
RMS voltage at some distinct points along the line and NOT measuring the
current at all, will get the right SWR answer independent of line
impedance (assuming it's designed properly...). That is, if you
really measure the SWR as (Vrms.max / Vrms.min), where the max and
min are found by "sliding a voltmeter along the line" as it were,
then the measurement is independent of line impedance. However, this
is !!_NOT_!! the way any of the common SWR bridges work.

: 73, K7ITM

End of Ham-Ant Digest V93 #29
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